

year to have been taken on the island of Lewes, but which on investigation turned out to have been similarly brought from its native habitat*.

CLUPEA SPRATTUS.

Although Mr. Holdsworth, in his excellent work on 'Deep-Sea Fisheries' (pp. 133, 134), has alluded to the subject of the spawning of these fishes, I have thought that further confirmation of his observations might be desirable. I have therefore this season had examples collected and sent to me from Cornwall, when on January 12th I found some had fully developed ova and others similarly forward milt.

On the Apparent Retention of a Sur-anal Plate by a young *Echinometra*. By F. JEFFREY BELL, M.A. (Communicated by Dr. J. MURIE, F.L.S.)

[Read March 3, 1881.]

It will, I think, be of interest to direct the attention of the Society to the characters of the apical system of a small specimen of what I take to be an example of the species *Echinometra viridis*. Did it stand alone, we might have some difficulty in associating it with any completely adult form as yet known to us; fortunately, however, there are in the National collection three other specimens, which exhibit a less remarkable arrangement of the parts of their apical area: none, unfortunately, have any definite history, and they are all denuded of spines.

The retention of a sur-anal plate in a test with its longest (though not its morphological) axis as much as 12·5 millim. long is a point of sufficient importance, in so differentiated a genus as *Echinometra*, as to make the determination of the species a matter of comparatively secondary concern.

That the plate in question is to be regarded as a persistent sur-anal will be seen to be something more than a plausible suggestion, if the illustrating woodcut be carefully examined. In character and relation it would correspond either to the definition

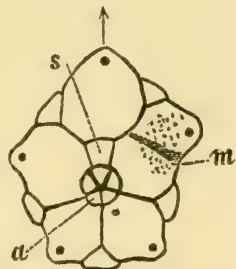
* Since reading this paper I have received a note from Mr. Dunn, of Mevagissey, who informs me that he has just seen Captain Ball, of 'The Roseland,' who has informed him that Barron brought the Ostracion in question from the Island of Ascension.

of Wright, "additional or sur-anal plate developed in the centre of the disk before the anal opening;" or, in the words of the more recent definition of Alex. Agassiz *, it has "an ocular plate opposed to the median line of the subanal plate, the adjoining genital plates uniting just in front of this imaginary median line to separate the ocular plate more or less from the anal system."

There are other points in the characters of the constituent plates of the apical area that are worth a moment's attention: the large size of the genital plates, the small extent to which that which bears the madreporite is perforated, the presence of five valve-like anal plates, are indeed suggestive points.

But it only remains to be noticed that we have here to do rather with a case of reversion than of direct inheritance; the three other specimens, which clearly enough belong to the same species, have none of them any persistent plate. Of the three, unfortunately only one has its anal plates preserved, and it has but three. On the other hand, if it be a case of reversion, the ancestor of the *Echinometra* had no slight resemblance to *Salenia*; and the fact will have to be borne in mind when a serious attempt is made to define the relations of the *Salenidæ* to the rest of the regular Echinoidea.

The difference between this sur-anal plate and the large plate on the anal area proper, which is not unfrequently found in specimens of *Temnopleurus* and other forms, seems to me to suggest the question whether the sur-anal plate has really, of itself or primarily, any relations to the covering plates of the anal area. In the specimen here figured it has, at any rate, no share in covering that orifice. Notwithstanding its retention, proper anal plates have become developed, and alone exhibit relations to the anal orifice. Here, just as in *Salenia*, there is no question as to the small anal plates being distinct from the sur-anal. In *Temnopleurus* and its allies the large plate lies *within* the boundary of the anus, and may even not quite touch the periphery of the anal area. So far, then, as morphological identity can be spoken to by similarity in position, the homology which has of late been generally regarded as subsisting between these plates must be some-



Sketch of parts of young *Echinometra*, enlarged 4 times, and showing, *s*, sur-anal plate, *a*, anal plates, and, *m*, madreporic plate.

* Bull. M. C. Z. vol. ix. p. 187.

thing more than doubtful. The absence of such an anal plate in the ancient *Cidaridæ*, the mode by which the anal plates appear in *Echinocidaris*, the membranous condition which obtains in *Diadema* (a form ancient enough, as we now know, to retain a rudimentary internal gill), suggest that what is seen in the more highly differentiated *Temnopleuridæ* is due to some secondary process now considerably obscured. It is possible that an increase in the rapidity of the rate of development has here, as sometimes happens with the blastopore and the mouth or anus, given to a more lately acquired structure a superficial resemblance to one which was not even its proper predecessor.

On a Lithistid Sponge and on a Form of *Aphrocallistes* from the Deep Sea off the Coast of Spain. By Prof. P. MARTIN DUNCAN, M.B. Lond., F.R.S., F.L.S., &c.

[Read February 17, 1881.]

(PLATES XXIV. & XXV.)

DURING one of the dredgings of the Expedition of H.M.S. 'Porcupine,' in 1095 fathoms, off the south-west coast of Spain, a mass of fistulose coral was brought up; it included in its branches many foreign substances, and amongst them two small siliceous sponges. The coral was described by me in my monograph of the deep-sea corals*; and lately my attention has been drawn to the beautiful sponges.

One of them, about an inch in height and one third of an inch in thickness, has numerous oscules on it, and it is perfect in its hard parts. Of the soft tissues no idea can be obtained. The sponge evidently belongs to the *Lithistidæ*; for the skeletal elements branch after the fashion of the group, interlock at their ends with more or less filigreed terminations, producing a continuous network, and there are connective peltate spicula on the outside.

The sponge-body is very hard and resisting; but it is smooth to the touch and eye, and is of a dirty white colour; the outside of the body is faintly wrinkled here and there, and is produced on the flanks and at the apex into several wart-like elevations, each terminating in an oscule which leads deeply into the mass. The oscular processes are short, unequal, differently directed, and

* Trans. Zool. Soc. vol. viii. pt. v. p. 327.